**Seminar**: "Geometry&Physics@DFT"

**Location** : DFT Seminar Room
(Seminar Homepage) (Indico Page)

**Date**: Wednesday, October 7, 2015, 12:00 noon

**Title**: **Complex geometry and non-geometric M-Theory backgrounds**

**Speaker**: **Dr. Carlos Shahbazi**
(IPhT-CEA, Saclay)

**Abstract**: We study a particular class of supersymmetric M-theory eight-dimensional non-geometric compactification backgrounds to three-dimensional Minkowski space-time, proving that the global space of the non-geometric compactification is still a differentiable manifold, although with very different geometric and topological properties with respect to the corresponding standard M-theory compactification background: it is a compact complex manifold admitting a Kähler covering with deck transformations acting by holomorphic homotheties with respect to the Kähler metric. We show that this class of non-geometric compactifications evade the Maldacena-Nuñez no-go theorem by means of a mechanism originally developed by Mario García-Fernández and the author for Heterotic Supergravity, and thus do not require $l_P$-corrections to allow for a non-trivial warp factor or four-form flux. We obtain an explicit compactification background on a complex Hopf four-fold that solves all the equations of motion of the theory. We also show that this class of non-geometric compactifications is equipped with a holomorphic principal torus fibration over a projective Kähler base as well as a codimension-one foliation with nearly-parallel $G_2$-leaves, making thus contact with the work of M. Babalic and C. Lazaroiu on the foliation structure of the most general M-theory supersymmetric compactifications.